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eight or ten inches. Some of these might easily have been dropped by the birds in bringing them to the nest, for many of them are heavy loads for such slender bills at best, but it is of course impossible to imagine that such accumulations of stones could be the result of accident.

In rock walls filled with cracks and openings that, to the superficial glance look just alike for miles, might it not perhaps be a help to have a stone walk before the one crack you lived in? The question leads back to the more far reaching one—how do birds locate their nests and young? Is 'intuition', a 'sense for locality' helped out by observation of details such as might be noted by men? The subject offers an interesting field for observation. It would be interesting, also, to find out whether *Salpinctes* uses stones in its nests in other formations than sandstone, where small light stones are not so readily found for the looking. In other words, how general is the *Salpinctian* use of stones, and what proportion of nests have the walks leading away from them?

Washington, D. C.



ROCK WREN NEST IN CLIFF

Some Winter Birds of the High Sierras

BY WILLIAM W. PRICE

ILLUSTRATED WITH PHOTOGRAPHS BY THE AUTHOR

BY December or January winter has closed down over the High Sierra and it does not lift until June. The snow falls day after day, not in light playful flurries, but in great heavy flakes out of a leaden sky, so thick you cannot see a hundred yards. This snow piles up deep on rock and tree, two or three feet in a night, an even blanket over all the landscape. Or the snow may come with

gales of wind, a veritable blizzard, the light powdery crystals driving into every crack and cranny, piling behind obstructions in huge drifts, ten, twenty, fifty feet deep. By April the heavy storms have passed; the snow rapidly settles so that one may walk upon the crust, and from now on the snow melts quickly. The weather during the winter is not bitterly cold, the temperature rarely drops to zero and then only on clear nights; but as a rule there is frost every night.

The traveler through these vast wastes of snow is impressed with the utter silence and solitude. All the familiar scenes of summer are gone. The roads and the trails are blotted out; the houses are eave-deep or entirely covered; the alpine lake is a flat white plain; the waterfalls are mute, mere trickling dribblets over ice-sheeted precipices, and all the varied and abundant animal life of summer has disappeared. No marmot or lagomys calls shrilly from the rock piles, no chipmunk chatters as you pass; there is no whistle of the quail, no song of warbler or thrush. One may hear the rattle of a woodpecker, the cry of a blue-fronted jay, or the lisp-ing notes of a mountain chickadee, but even these are uncommon.

During the past four or five years I have made several short winter excursions



LAKE OF THE WOODS AND PYRAMID PEAK

into the high mountains both at Summit Station and at Glen Alpine, at elevations from six to ten thousand feet. Traveling here is done entirely on the Norwegian skee for the snow averages from ten to twenty feet deep on the level.

These skees are thin strips of wood three or four inches wide and from six to ten feet long with an upcurve at the front end. They are used exclusively by the dwellers along the railroad and at the scattered resorts, in preference to the racket-shaped Canadian snow-shoe. Without these one would often sink waist deep in the soft, powdery snow.

The usual way of reaching the Glen Alpine region is by railroad to Truckee, thence on skees sixteen miles to Lake Tahoe where a little mail steamer twice a week makes the circuit of the lake. Leaving the boat at Tallac at the south end of the lake we use the skees once more to make the seven miles to Glen Alpine where food and shelter may be had from the watchman at the resort. From here it is four miles to Mt. Tallac and six miles to Pyramid Peak, each mountain being about ten thousand feet altitude.

A complete list of the birds is not attempted; only those species which appear

residents during the dead of winter are enumerated. By the middle of May the snow has mostly gone below 6500 feet. Summer residents are arriving in great numbers and some have begun nest-building. Above 8000 feet, it is often July before the ground is bare of snow.

DUSKY GROUSE (*Dendragapus o. fuliginosus*). I have found this bird each winter to at least 9500 feet. It prefers groves of the mountain pine and red fir, selecting trees of the thickest foliage on the northeast hill slopes. The prevailing winds are from the southwest. One may often approach a tree where a dozen or more are roosting. Without warning one will leave with great rush of wings, dropping like a cannon ball to some lower level, to be followed, one at a time, by the entire flock.

HAIRY WOODPECKER (*Dryobates v. hyloscopus*). Found throughout the woods but especially in the tamarack pines along the water courses. Its food supply, the larvæ of beetles and ants, does not seem to be affected by the cold and deep snows. Two or three may be seen in a day's trip, which illustrates its rarity.

WILLIAMSON SAPSUCKER (*Sphyrapicus thyroideus*). Rather more common



SKEEING NEAR GLEN ALPINE, LAKE TAHOE

than the preceding woodpecker, but also preferring the groves of tamarack. The resonant roll call of this bird, so striking a sound in the summer, is also heard in the winter, but doubly impressive in the silence of the white wilderness. One blustering day I was resting under the lee of a pine on Mt. Tallac, when one of these birds, a male with rich glossy plumage, alighted within a few feet of me. So long as I was perfectly quiet it searched about in the crevices of the bark entirely without fear; upon a slight movement on my part it hopped away to a safe distance where it remained eyeing me inquisitively. When I finally took my way along the mountain side the bird was still in the tree.

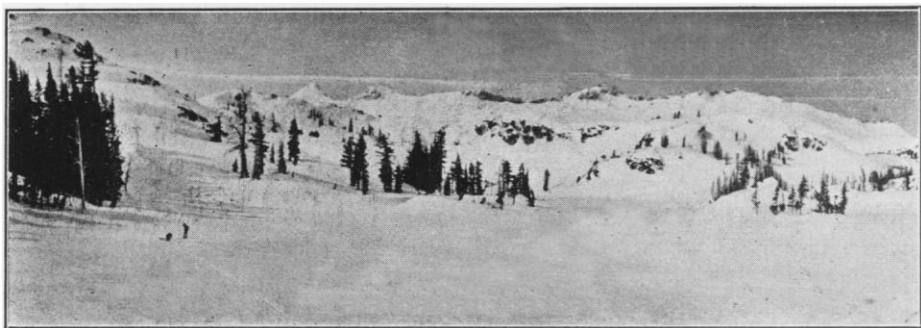
BLUE-FRONTED JAY (*Cyanocitta s. frontalis*). This bird seems equally omnipresent winter and summer, equally noisy and inquisitive. These are seen singly, or in companies of three or four, flying from tree to tree, continually squawking. They are sometimes seen along the open watercourses where they appear to find food. A few were in regular attendance at Glen Alpine quarreling for the table scraps. I have frequently seen them in the smoke and gloom of the snowsheds of

the railway, feeding on the waste dumped from the dining cars. On my approach they would fly out through the cracks in the shed, perch on nearby trees until the coast was clear, and then return to their feast.

CLARKE NUTCRACKER (*Nucifraga columbiana*). I have seen this bird on Mt. Tallac where it appeared to be feeding on the cones of the timberline pine.

BENDIRE CROSSBILL (*Loxia c. bendirei*). This is one of the most interesting of the winter birds, but probably of rather irregular occurrence as I have seen only a few flocks. Each time they were feeding industriously on the cones of the tamarack pine, in a few minutes fairly darkening the snow beneath with scales and refuse. At Summit in February, 1901, I observed a large flock of these birds each day during my stay of a week. The flock, perhaps containing twenty individuals, adults and those in immature plumage, was not wary, but often allowed me to approach the tree and watch them deftly pry open the cones with their sharp mandibles. When alarmed, the whole flock would leave the tree with a rush, circle a few times and alight in a tree in the neighborhood, beginning to feed at once.

AMERICAN DIPPER, (*Cinclus mexicanus*). The dipper is found along all the open streams. I have heard its beautiful wild song at all times, strangely sweet



HEATHER LAKE AND PYRAMID PEAK RANGE

and almost out of place in the solitude of winter. One evening along the Truckee River in the midst of a fierce snowstorm I heard its song. I could not locate the bird at first, but after a time I found it perched on a rock in the shallow water and overhung by a huge snowbank. For a time I watched it pouring out song after song, and when I passed on I could still hear the sweet notes until distance and the rush of the storm silenced it.

CANYON WREN (*Catherpes m. punctulatus*). I found a dead bird of this species in the snow at the Glen Alpine resort in March, 1903. The watchman there told me that there had been a pair about the buildings the entire winter but they had disappeared during the recent hard storm. This present February I heard the song of this bird in the snow-sheds at Summit Station and while I did not see the specimen its song was unmistakable. It probably had its retreat in the round house or other railroad buildings. The sheds themselves are so filled with smoke and gas from the passing locomotives that residence there would be intolerable.

MOUNTAIN CHICKADEE (*Parus gambeli*). This is by far the most common of all the winter birds. They are found everywhere and often in scattering flocks of

twenty or more individuals. They are the house pets of all the inhabitants. They eat crumbs from the kitchen steps, alight on the window frames, and will even enter the houses if a window is left open. The children at many a lonely section house on the railroad beguile the long winter days with feeding these pets. At Glen Alpine I had good opportunity to observe them, for there the watchman had a tray filled with crumbs, nailed to the window ledge. At this the chickadees would be feeding every hour of the day, sometimes five or six at a time. They were continually uttering their "chick-a-dee, dee, dee." A bit of salt pork hung up by a string furnished an especial relish. Some were clinging to it head downwards, most of the time. They were omnivorous eaters, but seemed to like best soaked cracker crumbs. To this feeding place at Glen Alpine they came from at least half a mile distant. I have watched them fly from tree to tree making directly for the kitchen window. In the woods the chickadees appear to feed upon insect life, but what I do not know.

Alta, California.

Explanatory

BY LYMAN BELDING

WHEN the Land Birds of the Pacific District was published I excluded considerable matter that was intended for it. This consisted of notes on the food of birds, so-called correlative phenomena, miscellaneous matter contributed by myself and Signal Service reports I had copied at San Diego, in the Sacrameeto Valley, and at the summit of the Central Pacific R. R. I stated on page 2 that the data on food was meager, and therefore unsatisfactory, and I might have added, somewhat contradictory.

The so-called correlative phenomena contained some very interesting items, but was used sparingly because it related distantly, if at all, to the coming of the birds. The Signal Service reports had apparently no closer connection with migration than the correlative phenomena. Possibly some other person might have considered the excluded matter as having more value than I attached to it.

I have been asked why I cited Fort Yuma and Fort Mojave records. It was because I knew that old Fort Yuma was on the west bank of the Colorado. Fort Mojave was on the east bank but I knew that Dr. Cooper had collected on both sides of the river. I also knew that the early ornithologists were not careful to name the precise locality where they got their specimens. I had seen *Ampelis garrulus* in Plumas County, July, 1885. Another of Dr. Cooper's Fort Mojave species, *Toxostoma crissale*, I had taken on the west side of the Colorado River, latitude about thirty degrees, in May of the same year.

At several stations there was more than one observer, and this was responsible for my unusual method of giving credit.

I placed the manuscript in Mr. Bryant's hands, and expected him to attend to its publication. He did so partly, and during his absence from the Academy of Sciences I was requested to visit San Francisco and finish reading the proofs. I discovered that in the effort to abbreviate, a few errors had crept into the volume, some of which I corrected and others I overlooked, while it was too late to correct a